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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/022,826	12/20/2001	Sung-hee Hwang	1293.1215	1431

49455 7590 10/24/2005

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EXAMINER

TORRES, JOSEPH D

ART UNIT PAPER NUMBER

2133

DATE MAILED: 10/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/022,826

Applicant(s)

HWANG ET AL.

Examiner

Joseph D. Torres

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-8 and 32-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-8 and 32-41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-3, 5-8 and 32-41 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites, "interleaving the data from the plurality of the partitions so that partitions from each of the ECC blocks are alternately selected such that progression through the partitions of each ECC block occurs diagonally to generate a first recording block".

The Examiner is not sure which of the following is intended 1) --interleaving the data from the plurality of the partitions by alternately selecting the ECC blocks such that progression through the partitions of each ECC block occurs diagonally to generate a first recording block--, --interleaving the data from the plurality of the partitions by alternately selecting partitions of an ECC block such that progression through the partitions of the ECC block occurs diagonally to generate a first recording block--, --interleaving the data from the plurality of the partitions by alternately selecting the ECC blocks that are combined to form a group of ECC blocks such that progression through the partitions of the group of ECC blocks occurs diagonally to generate a first recording block--,...., The language is so ambiguous, imprecise and indefinite and so open to so

many interpretations some of which the Examiner has provided that the Examiner has difficulty determining which interpretation the Applicant's intend.

The Examiner assumes the following interpretation: --interleaving the data from the plurality of the partitions by alternately selecting the ECC blocks that are combined to form a combined block of ECC blocks such that progression through the partitions of the combined block of ECC blocks occurs diagonally in the combined block of ECC blocks to generate a first recording block--.

Claim 32 recites, "interleaving the data from the partitions, comprising alternately selecting the partitions of each of the ECC blocks along diagonal paths".

The Examiner assumes the following interpretation: --interleaving the data from the partitions by forming a combined block of ECC blocks and alternately selecting the partitions of from the combined block of ECC blocks along diagonal paths of the combined block of ECC blocks--.

***Response to Arguments***

2. The following is a summary of the current rejection to claims 1 and 32:

Noda teaches dividing each of a plurality of error correction code (ECC) blocks corresponding to the data into a plurality of partitions which are formed by dividing each ECC block in row and column directions (Figures 5 and 6 in Noda are ECC blocks divided into in row and column direction; col. 6, lines 26-35 of Noda in teach that 4 channels are used to interleave a combined block such as the combined block of data in Figure of Noda; Figure 5 in Noda teaches each ECC block is divided into 208 rows and 182 byte columns; the 16 sector partitions of each ECC block is formed using 16 rows and 182 byte columns; hence Noda explicitly teaches dividing each of a plurality of error correction code (ECC) blocks corresponding to the data in Figures 1 and 5 into a plurality of sector partitions which are formed by dividing each ECC block into 208 rows and 182 byte columns in row and column directions and constructing the sector partitions using 16 rows and 182 byte columns from the 208 rows and 182 byte columns); interleaving the data from the plurality of the partitions by alternately selecting the ECC blocks that are combined to form a combined block of ECC blocks such that progression through the partitions of the combined block of ECC blocks occurs diagonally in the combined block of ECC blocks to generate a first recording block (Figure 8 in Noda teaches a combined block of 4 ECC blocks comprising sectors 100-163 for four channels A-D, channel A comprising sectors 100-115, channel B comprising sectors 116-131, channel C comprising sectors 132-147 and channel D comprising sectors 148-163; Note: during reading the column of the combined block are

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delayed by 4 rows and are read row wise in the offset position as shown in Figure 8, e.g., sectors 112, 124, 136 and 148; the row wise sectors form a diagonal in the original combined block of 4 ECC blocks since a line drawn through the centers a 4x4 table in which they reside is oblique to the borders of the table; Note: Miriam-Webster's dictionary defines diagonal as in an oblique direction); modulating the first recording block (see Figure 3 in Noda); and recording the modulated first recording block on the optical disc (see Figure 3 in Noda).

Example: The following is a table representation of the combined ECC blocks for four channels A, B, C and D, each channel containing an ECC block as described in col. 6, lines 26-35 of Noda. Note: there are 3 combined blocks in the table: Combined Block 1 comprising sectors 36-99 with 36-51 in the channel A ECC block, 52-67 in the channel B ECC block, 68-83 in the channel C ECC block and 84-99 in the channel D ECC block; Combined Block 2 comprising sectors 100-163 with 100-115 in the channel A ECC block, 116-131 in the channel B ECC block, 132-147 in the channel C ECC block and 148-163 in the channel D ECC block; and Combined Block 3 comprising sectors 164-227 with 164-179 in the channel A ECC block, 180-195 in the channel B ECC block, 196-211 in the channel C ECC block and 212-227 in the channel D ECC block.

Channel A	Channel B	Channel C	Channel D
36	52	68	84
37	53	69	85
38	54	70	86
39	55	71	87
40	56	72	88
41	57	73	89
42	58	74	90
43	59	75	91
44	60	76	92

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45	61	77	93
46	62	78	94
47	63	79	95
48	64	80	96
49	65	81	97
50	66	82	98
51	67	83	99
100	116	132	148
101	117	133	149
102	118	134	150
103	119	135	151
104	120	136	152
105	121	137	153
106	122	138	154
107	123	139	155
108	124	140	156
109	125	141	157
110	126	142	158
111	127	143	159
112	128	144	160
113	129	145	161
114	130	146	162
115	131	147	163
164	180	196	212
165	181	197	213
166	182	198	214
167	183	199	215
168	184	200	216
169	185	201	217
170	186	202	218
171	187	203	219
172	188	204	220
173	189	205	221
174	190	206	222
175	191	207	223
176	192	208	224
177	193	209	225
178	194	210	226
179	195	211	227

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The following is a table representation of the combined ECC blocks for four channels A, B, C and D with the columns delayed by 4 rows so that the combined ECC blocks can be read row wise.

Channel A	Channel B	Channel C	Channel D
36			
37			
38			
39			
40	52		
41	53		
42	54		
43	55		
44	56	68	
45	57	69	
46	58	70	
47	59	71	
48	60	72	84
49	61	73	85
50	62	74	86
51	63	75	87
<b>100</b>	64	76	88
<b>101</b>	65	77	89
<b>102</b>	66	78	90
<b>103</b>	67	79	91
<b>104</b>	<b>116</b>	80	92
<b>105</b>	<b>117</b>	81	93
<b>106</b>	<b>118</b>	82	94
<b>107</b>	<b>119</b>	83	95
<b>108</b>	<b>120</b>	<b>132</b>	96
<b>109</b>	<b>121</b>	<b>133</b>	97
<b>110</b>	<b>122</b>	<b>134</b>	98
<b>111</b>	<b>123</b>	<b>135</b>	99
<b>112</b>	<b>124</b>	<b>136</b>	<b>148</b>
<b>113</b>	<b>125</b>	<b>137</b>	<b>149</b>
<b>114</b>	<b>126</b>	<b>138</b>	<b>150</b>
<b>115</b>	<b>127</b>	<b>139</b>	<b>151</b>
164	<b>128</b>	<b>140</b>	<b>152</b>
165	<b>129</b>	<b>141</b>	<b>153</b>
166	<b>130</b>	<b>142</b>	<b>154</b>
167	<b>131</b>	<b>143</b>	<b>155</b>



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168	180	<b>144</b>	<b>156</b>
169	181	<b>145</b>	<b>157</b>
170	182	<b>146</b>	<b>158</b>
171	183	<b>147</b>	<b>159</b>
172	184	196	<b>160</b>
173	185	197	<b>161</b>
174	186	198	<b>162</b>
175	187	199	<b>163</b>
176	188	200	212
177	189	201	213
178	190	202	214
179	191	203	215
	192	204	216
	193	205	217
	194	206	218
	195	207	219
		208	220
		209	221
		210	222
		211	223
			224
			225
			226
			227

Note: the row wise read data is disposed in a diagonal in the original combined ECC blocks.

### ***Response to Arguments***

3. Applicant's arguments filed 09/06/2005 have been fully considered but they are not persuasive.

The Applicant contends, "the rejection of claim 1 under 35 U.S.C. § 102 (e) should be withdrawn because Noda fails to teach or suggest each feature of independent claim 1, such as for example, the division in the column direction".

The Examiner disagrees and asserts that claim 1 does not recite "dividing each of a plurality of error correction code (ECC) blocks corresponding to the data into a plurality of partitions which are formed by dividing each ECC block in row and column directions". Figure 5 in Noda teaches each ECC block is divided into 208 rows and 182 byte columns. The 16 sector partitions of each ECC block is formed using 16 rows and 182 byte columns; hence Noda explicitly teaches dividing each of a plurality of error correction code (ECC) blocks corresponding to the data in Figures 1 and 5 into a plurality of sector partitions which are formed by dividing each ECC block into 208 rows and 182 byte columns in row and column directions and constructing the sector partitions using 16 rows and 182 byte columns from the 208 rows and 182 byte columns.

No matter how the Applicant spins it, the sector partitions are still formed from the 208 rows and 182 byte columns; hence they are still formed by dividing each ECC block into 208 rows and 182 byte columns.

The Applicant contends, "the progression by interleaving in Noda according to sectors does not flow in a diagonal line. The delays in Noda do not progress through the individual ECC blocks along a diagonal line, rather this simply adjusts the output of data from each different ECC block. Looking at FIG. 7, for example, the progression through

the circuit is not shown to be diagonal for an individual ECC block. The data in the sectors is not interleaved such that a diagonal progression occurs. The progression as shown in FIG. 8 occurs sequentially in a given ECC block by sector and the delays simply stagger the next ECC block (e.g. a sector from Block A is followed by a sector from Block B)".

The Examiner disagrees and asserts that Figure 8 in Noda teaches a combined block of 4 ECC blocks comprising sectors 100-163 for four channels A-D, channel A comprising sectors 100-115, channel B comprising sectors 116-131, channel C comprising sectors 132-147 and channel D comprising sectors 148-163. Note: during reading the column of the combined block are delayed by 4 rows and are read row wise in the offset position as shown in Figure 8, e.g., sectors 112, 124, 136 and 148; the row wise sectors form a diagonal in the original combined block of 4 ECC blocks since a line drawn through the centers a 4x4 table in which they reside is oblique to the borders of the table. Note: Miriam-Webster's dictionary defines diagonal as in an oblique direction. Example: The following is a table representation of the combined ECC blocks for four channels A, B, C and D, each channel containing an ECC block as described in col. 6, lines 26-35 of Noda. Note: there are 3 combined blocks in the table: Combined Block 1 comprising sectors 36-99 with 36-51 in the channel A ECC block, 52-67 in the channel B ECC block, 68-83 in the channel C ECC block and 84-99 in the channel D ECC block; Combined Block 2 comprising sectors 100-163 with 100-115 in the channel A ECC block, 116-131 in the channel B ECC block, 132-147 in the channel C ECC block and 148-163 in the channel D ECC block; and Combined Block 3 comprising sectors 164-

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227 with 164-179 in the channel A ECC block, 180-195 in the channel B ECC block,  
196-211 in the channel C ECC block and 212-227 in the channel D ECC block.

Channel A	Channel B	Channel C	Channel D
36	52	68	84
37	53	69	85
38	54	70	86
39	55	71	87
40	56	72	88
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44	60	76	92
45	61	77	93
46	62	78	94
47	63	79	95
48	64	80	96
49	65	81	97
50	66	82	98
51	67	83	99
<b>100</b>	<b>116</b>	<b>132</b>	<b>148</b>
<b>101</b>	<b>117</b>	<b>133</b>	<b>149</b>
<b>102</b>	<b>118</b>	<b>134</b>	<b>150</b>
<b>103</b>	<b>119</b>	<b>135</b>	<b>151</b>
<b>104</b>	<b>120</b>	<b>136</b>	<b>152</b>
<b>105</b>	<b>121</b>	<b>137</b>	<b>153</b>
<b>106</b>	<b>122</b>	<b>138</b>	<b>154</b>
<b>107</b>	<b>123</b>	<b>139</b>	<b>155</b>
<b>108</b>	<b>124</b>	<b>140</b>	<b>156</b>
<b>109</b>	<b>125</b>	<b>141</b>	<b>157</b>
<b>110</b>	<b>126</b>	<b>142</b>	<b>158</b>
<b>111</b>	<b>127</b>	<b>143</b>	<b>159</b>
<b>112</b>	<b>128</b>	<b>144</b>	<b>160</b>
<b>113</b>	<b>129</b>	<b>145</b>	<b>161</b>
<b>114</b>	<b>130</b>	<b>146</b>	<b>162</b>
<b>115</b>	<b>131</b>	<b>147</b>	<b>163</b>
164	180	196	212
165	181	197	213
166	182	198	214
167	183	199	215
168	184	200	216
169	185	201	217
170	186	202	218

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171	187	203	219
172	188	204	220
173	189	205	221
174	190	206	222
175	191	207	223
176	192	208	224
177	193	209	225
178	194	210	226
179	195	211	227

The following is a table representation of the combined ECC blocks for four channels A, B, C and D with the columns delayed by 4 rows so that the combined ECC blocks can be read row wise.

Channel A	Channel B	Channel C	Channel D
-----------	-----------	-----------	-----------

36			
37			
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40	52		
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42	54		
43	55		
44	56	68	
45	57	69	
46	58	70	
47	59	71	
48	60	72	84
49	61	73	85
50	62	74	86
51	63	75	87
<b>100</b>	64	76	88
<b>101</b>	65	77	89
<b>102</b>	66	78	90
<b>103</b>	67	79	91
<b>104</b>	<b>116</b>	80	92
<b>105</b>	<b>117</b>	81	93
<b>106</b>	<b>118</b>	82	94
<b>107</b>	<b>119</b>	83	95
<b>108</b>	<b>120</b>	<b>132</b>	96

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109	121	133	97
110	122	134	98
111	123	135	99
112	124	136	148
113	125	137	149
114	126	138	150
115	127	139	151
164	128	140	152
165	129	141	153
166	130	142	154
167	131	143	155
168	180	144	156
169	181	145	157
170	182	146	158
171	183	147	159
172	184	196	160
173	185	197	161
174	186	198	162
175	187	199	163
176	188	200	212
177	189	201	213
178	190	202	214
179	191	203	215
	192	204	216
	193	205	217
	194	206	218
	195	207	219
		208	220
		209	221
		210	222
		211	223
			224
			225
			226
			227

Note: the row wise read data is disposed in a diagonal in the original combined ECC blocks.

All amendments and arguments by the applicant have been considered. It is the

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examiner's conclusion that the claims, as amended, are not patentably distinct or non-obvious over the prior art of record in view of the reference, Noda; Chosaku (US 6216245 B1) as applied in the Non-Final Action filed 11/16/2004. Therefore, the rejection is maintained.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 5-8 and 32-41 are rejected under 35 U.S.C. 102(e) as being anticipated by Noda; Chosaku (US 6216245 B1).

See the Non-Final Action filed 11/16/2004 for detailed action of prior rejections.

### ***Conclusion***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**JOSEPH TORRES**  
**PRIMARY EXAMINER**

Joseph D. Torres, PhD  
Primary Examiner  
Art Unit 2133